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feet than during other parts of the molting cycle.

The more gradual molts may also affect the rheotactic reaction. A cut of 20 per cent. in the positive response has been observed when one segment was molted. Regulation from depressed to normal positiveness occurs more rapidly after a molt than at any other time.

The detailed account just given shows that the effect of the molting period lasted for about five hours after the actual ecdysis took place. If the period extended as long beforehand it would make the time during which the rheotactic response is affected by the molting process extend over a period of ten hours. Since both the rheotactic and thigmotactic responses are weakened, this must be a critical time in the life of the stream isopod.

W. C. ALLEE

A NEVADA RECORD FOR THE CANADA OTTER,
LUTRA CANADENSIS (SCHREBER)

No otter has apparently been known from Nevada, although *Lutra canadensis* is known to occur in Idaho, and the type specimen of *L. canadensis sonora* (Rhoads) was taken at Montezuma Well, Yavapai County, Arizona. The Walker-Newcomb Expedition of the University of Michigan, in the summer of 1912, found a species common on the Humboldt River in the vicinity of Elko and Carlin, in the northeastern part of the state, and from a trapper a specimen was secured for the Museum of Zoology (Cat. No. 44,419).

The specimen obtained, a large adult male, is evidently to be referred to *L. canadensis*, as at present defined. The coloration is not as pale as described for *L. c. sonora*, being dark liver-brown above and paler below, the cheeks, lips, chin and throat whitish; and the post-orbital processes are not attenuated, as in *L. c. sonora*, but short and stout, as in typical *L. canadensis*.

ALEXANDER G. RUTHVEN,
FREDERICK M. GAIGE

SOCIETIES AND ACADEMIES

THE BOTANICAL SOCIETY OF WASHINGTON

THE eighty-seventh regular meeting of the Botanical Society of Washington was held at the Hotel Cochran, February 25, 1913. This was the

regular annual opening meeting of the society. Fifty members and forty-two guests were present.

The retiring president, Mr. W. A. Orton, delivered an address entitled "Environmental Influences in the Pathology of *Solanum tuberosum*." This paper was published in the *Journal of the Washington Academy of Sciences* (Vol. 3, p. 180, April 4, 1913).

The eighty-eighth regular meeting was held in Assembly Hall, Cosmos Club, Tuesday evening, April 1, 1913.

Mr. James T. Jardine was elected to membership.

The following papers were presented:

Notes on Diseases of Trees caused by Mistletoes:

Dr. G. G. HEDGCOCK.

Mistletoes are found only on conifers in northern and northeastern United States; only on angiosperms in southeastern and southern portions; and on both in western and southwestern regions, where they are the most widely disseminated.

The rate of spread of mistletoes is without doubt very slow. Near Frazer, Colorado, on an old burn in the forest, the rate of spread of *Razoumofskya americana* (Nutt.) Kuntze on the lodge pole pines (*Pinus contorta* Lond.) is estimated to be from 6 to 12 feet per annum, where mechanical expulsion of the seeds aided by winds are the controlling factors. Sporadic infections at much greater distances are caused possibly by birds or animals.

Light is the most important factor in determining the spread of mistletoes of species of both *Razoumofskya* and *Phoradendron*. Trees in the open, and in more exposed conditions, whether on ridges or edges of canyons or on level areas are most subject to attacks by mistletoes of both genera on account of the abundance of light. Trees in dense forests are not subject to attack. Mistletoes are stunted by dense shade, and bear but few, if any seeds, and can not well maintain themselves under conditions where the light is deficient.

One of the immediate effects of the presence of the sinkers of these parasites in the tissues of host trees and shrubs is a tendency to hypertrophy in the immediate region of penetration. In case of species of *Phoradendron*, unless the mistletoe plant is broken off there is little or no tendency for its sinkers to spread laterally in the tissues of the host, and when broken off, the rate of spread is slow, and no witches brooms are formed. In case of species of *Razoumofskya*, witches brooms are commonly produced. The lateral sinkers in such cases spread in the soft tissues of the host, keeping

pace with each year's growth, and sending forth new aerial shoots, from time to time. The stimulus of the presence of this ramifying network of the sinkers of the parasite causes an increase in the number of buds and twigs produced by the limb of the host attached and results in the formation of a more or less dense witches broom. The ability of the mistletoe to grow out to the extremities of the limbs enables it to send out shoots in the best illuminated portion of the broom, and bear seeds under the most favorable conditions of light.

All species of mistletoe are considered injurious in their final effect upon their host trees and shrubs. The leafy *Phoradendrons* are no doubt less injurious, owing to their increased chlorophyll-bearing surface and consequent greater ability to manufacture hydrocarbons. The leafless species of *Phoradendron* are more injurious than leafy ones. Species of *Razoumofskya*, owing to a very greatly reduced chlorophyll-bearing surface, are the most injurious of all. All species stunt the growth of the hosts. Owing to the slow spread of species of mistletoe in the forest, if all diseased trees are cut down on areas where timber sales are conducted, it will be possible to greatly lessen, if not entirely shut out these parasites from our future forests.

Notes on the Botany of Trinidad: Professor A. S. HITCHCOCK.

Mr. Hitchcock remained on the island of Trinidad from November 25 until December 31, except a few days spent on Tobago. On Trinidad there were collected 350 numbers of grasses, representing about 175 species. Grisebach (Fl. Brit. W. Ind.) describes 87 species from the island and Hart (Herb. List, Bot. Dept. Trinidad) lists 112 species. Several species known to grow in Trinidad were not obtained by Mr. Hitchcock, but many species were added to the known flora. Among the more interesting regions of the island were the Pitch Lake, where several species of grasses were found that were observed nowhere else, including *Panicum chloroticum* growing only in the water-holding depressions of the pitch; Aripo and Piarco Savannas, isolated low flat grassy openings in the valley of the Caroni River, where were found a probably new species of *Raddia* and *Paspalum serpentinum* Hochst. not found since the original collection by Keppler in Surinam nearly a century ago, and two new species of *Panicum*; and St. Joseph Savanna on the mountain side near the ancient capital of the island, St. Joseph. This savanna is of especial interest

because the mountain sides are generally covered with forest except where cleared for cultivation. This savanna has occupied its present position since an indefinitely early period, as shown by the flora. The dominant grass is *Trachypogon plumosus*, a species which has not been reported from Trinidad. This species together with others of the association are the common constituents of the savannas found on the Pacific slope of Panama and Central America. In this savanna was found an undescribed species of *Axonopus*, a beautiful golden annual, allied to *A. aureus*. At Tabaquite in the center of the island in the original forest or "High woods" was found another undescribed species of *Raddia* and the rare *Pharus parvifolius* Nash. Several other apparently undescribed species were found on various parts of the island. Most of the species, whose types were from Trinidad, were recollected at their type localities. The results of the expedition to Trinidad and to Jamaica, visited earlier on the same trip, were very satisfactory and will supplement the large West Indian collections previously incorporated in the National Herbarium.

C. L. SHEAR,

Corresponding Secretary

THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

THE 468th regular and 34th annual meeting of the Anthropological Society of Washington was held in room 43 of the new building of the National Museum at 4:30 P.M., April 15, 1913, the president, Mr. Stetson, in the chair.

The minutes of the last preceding annual meeting were read and approved.

Obituary notices were presented as follows: Miss Alice Fletcher for Miss Sarah A. Scull; Mr. F. W. Hodge for Mr. W. J. McGee; Dr. Lamb for Dr. Robert Fletcher.

The following officers were elected and installed for the ensuing year:

President—Mr. George R. Stetson.

Vice-president—Dr. John R. Swanton.

Secretary—Dr. Daniel Folkmar.

Treasurer—Mr. J. N. B. Hewitt.

Councillors—Mr. George C. Maynard, Mr. Felix Neumann, Dr. I. M. Casanowicz, Dr. E. L. Morgan and Mr. Francis LaFlesche.

Invitations to meetings of the National Academy of Sciences and the German Anthropological Association were presented and accepted with thanks.

WM. H. BABCOCK,

Secretary